work is really too new and controversial to present to comparative beginners, for whom the book appears to be intended.

Prof. Stewart seems to have a quarrel with facts; he thinks that hypotheses are unduly neglected by a certain school of chemists, and he reproaches physical chemists with not knowing enough about organic chemistry. It must be admitted, however, that hypotheses may run wild unless brought into some relation with experiment, and that comparatively few chemists find it possible to become really conversant with two such extensive branches of the science as organic and physical chemistry. To quarrel with mathematics as an aid to chemistry is also a little unfair. Even if it serves no other purpose, a smattering of the principles of mathematics might lead one to pause before committing oneself to a statement such as the following: "The possibility of negative mass suggests itself, and the atomic weight might be regarded as the algebraic sum of the positive and negative masses within the atom." Many strange old hypotheses have been galvanised into life again during the last few years, but this is surely the first reappearance of the theory of phlogiston.

The Bohr atom, we learn, has "not even satisfied the purely physical requirements of an atomic hypothesis." In addition, the "plain chemist," for whom Prof. Stewart says he has written, might not understand the "few elementary exercises in the calculus" which would be required for its elucidation. The reviewer must, however, entirely disagree with the suggestion that such matters were omitted to make room for "material of more practical interest."

The last chapter is full of assertions with which no thoughtful student of physical chemistry could for a moment agree. A personal attack on Ostwald is scarcely the sort of thing to include, as a whole chapter, in a "students'" book, even if the criticism were better informed than is the case in the present essay. It is to be hoped that this wholly unnecessary and entirely one-sided attack will disappear from future editions.

J. R. Partington.

Our Bookshelf.

A Diplomat in Japan. By the Right Hon. Sir Ernest Satow. Pp. 427. (London: Seeley, Service, and Co., Ltd., 1921.) 32*s.* net.

The author of this important work ranks as one of the greatest living authorities in this country on the tangled and critical politics of the Far East. His diplomatic career included an almost continuous residence in Japan from 1862 to 1882, and culminated in his tenure of the post of British Minister in Peking during the eventful years succeeding the Boxer rising of 1900. He has thus had almost unrivalled opportunities of watching the wonderful evolution of Japan from the position of a relatively weak feudal State, distracted by the struggles between rival *daimyôs,* to its present status as a great World Power with a highly centralised administration. In these circumstances it is to be hoped that the present book, interesting and useful as it is, may be only the first instalment of a more ambitious work which shall give us a critical interpretation of the deeper issues underlying the transition from the old to the new Japan, and a reasoned comparison of the social forces at work in the Empire of the Mikado with those affecting the development of her great neighbour on the mainland. Such a contribution to Western knowledge of the Far East is greatly needed.

In the volume under notice Sir Ernest Satow has contented himself with acting as showman of a marvellous pageant the culmination of which in the Japanese revolution of 1868 involved the downfall of the Shogunate and of feudalism, the restoration of the undivided authority of the Mikado, and the inauguration of the present Meiji era (Age of Enlightenment). The book consists mainly of an extremely graphic record of six years (1862–68), based upon the author's diaries written by him in his early days as a student-interpreter in Japan, when his youthful imagination was captured by the fascination of a wholly unfamiliar society, and when he was consumed by an insatiable curiosity to read and understand what had long been for Europeans a sealed and mysterious land. The book abounds in vivid descriptions of scenery, customs, men, and events. The account of one of the first overland journeys made by Europeans (from Ozaka to Yedo) is among the best of its kind. The personal narrative is sufficiently interspersed with historical explanations—*e.g.* chap. iii., "Political Conditions in Japan"—to enable the reader to appreciate the significance of the events described.

P. M. Roxby.

Hydro-Electric Survey of India. Vol. ii.: *Second Report on the Water-Power Resources of India, ascertained during the Season* 1919–20 *by F. E. Bull and J. W. Meares.* Pp. 123. (Calcutta: Government Printing Press, 1920.) R.1 6 annas.

The investigation of the water resources of India has been in hand for some time. The preliminary report, issued in the autumn of 1919, gave an account of the initiation of the Survey and the preparations made by Mr. Barlow in conjunction with Mr. Meares up to the time of the death of the former. The second volume, now issued, contains a *résumé* of the work which has been done since Mr. F. E. Bull took over the chief engineership, with Mr. Meares as electrical adviser. The itinerary consists of a series of visits to officers

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specially engaged in the Survey, checking their reconnaissances, and making further researches in British India and the Native States.

Part i. of the report consists of a note by Mr. Meares on the general principles of development and storage of water for electrical purposes, compiled for the guidance of those making local investigations, and exhibits the standard form in which it is recommended that the data collected should be recorded. Part ii. deals with administrative matters connected with the Survey. Part iii. contains the results of the reconnaissances made by the chief engineer and the electrical adviser, together with observations on the provincial surveys. Decisions were made as to the suitability or otherwise of various localities for further investigation. Difficulties, however, were encountered which prevented in several cases any very effective progress, and it is stated that until additional staff can be recruited and an adequate supply of survey instruments assured it will not be possible for the work to proceed on more satisfactory lines. Brysson Cunningham.

The Principles of Politics: An Introduction to the Study of the Evolution of Political Ideas. By Prof. A. R. Lord. Pp. 308. (Oxford: At the Clarendon Press, 1921.) 8*s.* 6*d.* net.

Prof. Lord modestly describes his book as a bridge for students from Sir Frederick Pollock's "History of the Science of Politics" to Dr. Bosanquet's "Philosophical Theory of the State." In this task he has succeeded well. His style is eminently readable, his arguments are clear, and his information is accurate. His analyses of political theories are supported by apt quotations, in the selection of which—*e.g.* from Spinoza's political writings and from the *Federalist*—he has departed, with excellent effect, from the traditional text-book grooves. The introductory chapter gives a good account of the influence of the Renaissance and the Reformation on political theory. There follows a chapter on the social contract, three chapters on different theories of sovereignty, one on democracy and representation, one on the notion of law, three on the theory of rights, and lastly a conclusion in which Prof. Lord sums up his own positive point of view, which is that of the classical idealist theory of the State, as developed, under the influence of Kant and Hegel, by T. H. Green and Bosanquet. It is a little to be regretted that Prof. Lord's scheme did not permit him to touch on the recent criticisms of this theory by writers like Graham Wallas, G. D. H. Cole, H. J. Laski, R. H. Tawney, and many others. He keeps strictly to historical materials. Hobbes, Locke, Rousseau, and Spinoza are the prominent figures, with Machiavelli, Bentham, and Burke in the second rank. No nineteenth-century theorists find mention except Mill and Spencer, and these only in the discussion of individualism. However, within these self-imposed limits Prof. Lord has written a book which teachers and students of political theory alike will find useful.

R. F. A. H.

Abnormal Psychology and its Educational Applications. By F. Watts. Pp. 191. (London: George Allen and Unwin, Ltd., 1921.) 7*s.* 6*d.* net.

The first edition of this book, published under the title of "Echo Personalities," received notice in Nature for July 17, 1919, under the title "Abnormal Psychology and Education." When a second edition was asked for, the author accepted the obvious suggestion and adopted a title which is more likely to indicate the scope of the book. Few changes have been made in the new edition; the chapters have been usefully subdivided, while those on psychopathology and the development of personality, and on the psychology of the defective mind and its influence on teaching methods, have received considerable additions. The chapter on the psychology of the supernormal mind finds no place in the new edition.

Tables of Physical and Chemical Constants, and some Mathematical Functions. By Dr. G. W. C. Kaye and Prof. T. H. Laby. Fourth edition. Pp. vii + 161. (London: Longmans, Green, and Co., 1921.) 14*s.* net.

The changes which have been made in the new edition of this valuable manual of constants are mostly matters of detail. All the chemical data have been recalculated on the basis of the international atomic weights, and, with the co-operation of Dr. E. Griffiths, of the National Physical Laboratory, a revision of the heat tables has been attempted. Tables of atomic numbers, spark-gap voltages, X-ray wave-lengths, and terrestrial magnetic constants also find a place in the new edition, and more extended tables of the relative value of the acceleration of gravity have been added. The first edition received detailed notice in Nature of February 8, 1912.

The Theory of Relativity. By Prof. R. D. Carmichael. Second edition. (Mathematical Monographs, No. 12.) Pp. 112. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1920.) 8*s.* 6*d.* net.

The earlier portion of Dr. Carmichael's book is a reprint of the first edition, which received notice in Nature for March 12, 1914. The later pages, which are grouped together under one large chapter with twelve subheadings, deal with the generalised theory of relativity. The new chapter opens with a brief summary of results obtained from the restricted theory, and an account of the general theory follows. Sufficient detail is given to provide some explanation of the general theory of gravitation, the nature of the three phenomena by which experimental proof of the theory may be expected, and the connection between the generalised theory and Maxwell's electromagnetic equations. Applications of the theory other than those which are immediately associated with the fundamental ideas or with phenomena for testing the validity of the theory have been omitted in order that attention may be directed more readily to the more novel aspects of the theory.

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